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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,950	11/25/2003	Russell Alan Parker	10030712-1	9616

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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,950

Applicant(s)

PARKER ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/15/2005 & 8/18/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14-18, 25-29 and 40-56 is/are pending in the application.
- 4a) Of the above claim(s) 2-11, 14, 15, 25, 26, 40-52 and 56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 16-18, 27-29 and 53-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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1. Applicant's election with traverse of Species C (surface modification without (net) deposition or etching of substrate), subspecies (ii)-plasma, in the reply filed on 8/18/2005 is acknowledged. The traversal is on the ground(s) that it imposes little if any additional searching or burden in examining all the non-elected species. This is not found persuasive because the various different techniques that may be applied the gasket are inclusive widely varying processes with no overlap in their classification & widely varying effects & chemistry, such that entirely different issue would be involved in each, placing considerable uncompensated burden on the examiner.

Applicant has stated that claims 1, 16-18, 25-29 & 53-56 are directed to the elected species. The examiner only partially agrees, and finds that claims 1, 16-18, 27, 28-29 & 53-55 are directed to the elected species. Claims 25 & 56 are to species C, but the non-elected subspecies (i) of texturing & involve NO plasma. Claim 26 is to oxidizing the gasket material by unspecified means, but for the substance of the gasket to be oxidized, one must either be adding oxygen (species A (ii)) or etching/removing as by ashing (species B (ii)). In claim 27, to increase hydrophilicity, one must generally add oxygen functionalizations or subtract hydrophobic groups, which would be in species A or B, however as discussed in [0049] in the specification, what is essentially cleaning off of hydrophobic contaminants from previous processing can also increase effective hydrophilicity, so some means of accomplishing claim 27 are elected. Similarly, claim 29, with its generic plasma option, has overlapping possibilities with the elected species

The requirement is still deemed proper and is therefore made FINAL.

2. This application contains claims 2-11, 14-15, 25-26, 40-52 & 56 drawn to an invention nonelected with traverse in Paper No. 8/18/2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

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3. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 28, it is unclear if the seal is a physical entity separate from the gasket, or if the treating is providing the gasket with the ability to form a seal when it is used to join the backing element & microarray substrate, or if the treating is providing the gasket with the ability to form a seal with just the backing element or is actually sealing it to the backing element, or exactly what is occurring when.

4. The previous 112 rejections & objections with respect to the elected claims have been removed with the amendment of 4/15/05.

5. Applicants' amendments have specified the particular substrate structure being treated, hence removed rejections based on the previous possible generic substrate treatment, as in sections: 7; 8 (semiconductor substrates); 9 (treating a metal film on a semiconductor); 10 (backside wafer processing); 11 (plasma deposition of silicon oxide, various plasma etching processes in semiconductor device processing); 12-13 & 15 (extraction processes with polysiloxanes in organic LED's); 16 corona discharge to effect hydrophilicity of transparencies for ink jet printing); 17 (Frautschi (2004/0234703 A1) with solvent & plasma cleaning of metal surfaces in preparation for polymer coating or the like); 18 (Bernard et al. (6,596,346 B2) who treats silicone stamps via oxidation plasma treatment to make the surface hydrophilic, followed by contact with a solution); & 19 (Omichi et al, treating photographic film backings with corona discharge (air implied) to hydrophilize the surface, followed by application of a aqueous H₂O₂, then UV rays, then coating) of the 1/18/2005 action.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. The judicially created doctrine of obviousness-type double patenting rejections as written of sections 21-22 of the 1/18/2005 action are overcome, as none of U.S. Patent No. 6,753,145 B2 or copending Application Nos. 09/944,083 or 10/005,577 are directed to the treatment of gaskets or sealing means for joining objects, such as those intended for use in microarray assemblies or array assay chambers. Nor do these copending cases' claims suggest combination with the references discussed below.

8. Claims 1, 16-18, 27-29 & 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doellgast (5,078,164) in view of Matsuzawa et al (JP2000-300670 A) or Gillmor et al (2003/207,099 A1).

Doellgast teaches making a gasket or sealing member that is to have a microarray pattern in the gasket, such that it makes an assembly of individual chambers. The gasket provides a leak proof arrangement for liquids or gases between two parts of a device, so as to provide a microarray. While not used for applicants intended use in an assay chamber, the configuration & potential materials that the gasket of Doellgast may be exposed to are consistent therewith, so the capability of the intended use is considered to be present. While Doellgast do not discuss how their gasket is made, they do provide an exemplary use of silicone rubber for the gasket. See the abstract; figures, esp. 4-6, 8-9 & 12-15; col. 3, lines 49-63; col. 6, lines 1-22+; & col. 8, lines 25-52+, esp. 39-42.

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Matsuzawa et al, as discussed in the abstract, provide a means for making rubber gaskets useful with syringes, hence relevant to microsyringes of Doellgast for both their materials & enduses. After a rubber gasket is molded in an appropriate shape, it is plasma treated with at least one plasma gas of H₂, N₂, O₂, F₂, a fluoride or an "inactive" gas; thereafter it is exposed to a plasma of a hydrocarbon gas, it would have been obvious to one of ordinary skill in the art to employ gasket forming procedures as suggested by Matsuzawa et al to create specific configurations as desired in Doellgast, in order to provide a gasket with satisfactory sealing properties in the presence of fluids. Note that the use of 2 separate plasmas can be considered to read on the "at least two" choice of claim 29, while the use of O₂ on the rubber would have been expected to increase the hydrophilicity of the rubber surface.

Gillmor et al teach use of polydimethyl siloxane (PDMS) for making a membrane used for sealing to the sample substrate & forming a microarray (of wells not chambers), that is required to be made hydrophilic, via 2 sequential plasma treatments before use. The 1st plasma lowers the contact angle, i.e. increases hydrophilicity, with a N₂, O₂, Ar or He plasma by functionalizing, then treats with a 2nd plasma to form permanent SiOH, SiCH₂OH or SiCOOH groups, hence it would have been obvious to one of ordinary skill in the art given analogous materials, configurations & sealing needs, to employ material made & treated in Gillmor et al as the silicone gasket material of Doellgast, as it would have been expected to be effective, especially as the wettability considerations of Gillmor et al would also been expected to be relevant for inducing flow through the capillary chambers' entrances where the gasket material is exposed. In Gillmor et al, see the abstract; fig.2; [0001-2]; [0008-14]; [0024-32], esp. [0028, 30 & 32]

9. Other art of interest suggesting use of plasma to improve adhesive or sealing qualities in gaskets includes: Lugez (US or JP, note treatment of gasket sheet material); JP03-11419; RD 276111 A; Shuttleworth (5,053,246, col.1); & Uyehara.

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Bernard (2005/0079540 A1) directed to forming molecular libraries with microarray format & sealing matrixes, which use PDMS, is substantially equivalent to Doellgast for the claims as written, but less clear on its structural description.

10. Applicant's arguments filed 4/15/2005 & 8/18/05, and discussed above have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1, 16-18, 27-29 & 53-55 have been considered but are moot in view of the new ground(s) of rejection.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained

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from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP 10/29&30/2005

A handwritten signature in black ink, appearing to read "Marianne Padgett", with a long horizontal flourish extending to the right.

**MARIANNE PADGETT
PRIMARY EXAMINER**